DOCUMENT RESUME

ED 375 734 HE 027 818

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TITLE Total Quality Management on Campus: Implementation, Experiences, and Observations. ASHE Annual Meeting Paper.
PUB DATE Nov 94
NOTE 24p.; Paper presented at the Annual Meeting of the Association for the Study of Higher Education (19th, Tucson, AZ, November 10-13, 1994).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Administrators; College Administration; College Faculty; *Colleges; Higher Education; *National Surveys; *Program Effectiveness; *Program Implementation; Teacher Attitudes; *Total Quality Management
IDENTIFIERS *ASHE Annual Meeting

ABSTRACT

A national survey of higher education institutions that have adopted Total Quality Management sought to document their implementation, principles, and results. The study developed and pre-tested a questionnaire which was then sent to 408 institutions. With a reminder post-card and a second mailing the total response rate was 67 percent or 168 institutions. From the respondents 15 institutions were selected for ongoing, in-depth study. Preliminary results indicate that TQM is just being tested as most institutions had adopted it since 1990. A majority of respondents indicated that it was a time-consuming process and could easily be perceived as a fad. Faculty made up a very small percentage of those participating in the TQM education program even in Business and Engineering schools where TQM was primarily being taught. Most institutions adopted TQM because presidents, deans or provosts were interested in the method. Support staff were the most frequently trained in TQM. The areas most frequently using TQM were top administration, registration, admissions, physical plant, and accounting. Respondents indicated that they were using all of the TQM tools. Sixty-three percent found a more collegial leadership style and 33 percent indicated no change. Key benefits were improved communication and improved customer satisfaction. (Contains 29 references.) (JB)

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Total Quality Management on Campus: Implementation, Experiences, and Observations

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This paper was presented at the annual meeting of the Association for the Study of Higher Education held at the Doubletree Hotel, Tucson, Arizona, November 10-13, 1994. This paper was reviewed by ASHE and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC collection of ASHE conference papers.

Abstract

Total Quality Management (TQM) in higher education is often advocated as the management practice for positively positioning institutions in the future. With a trend of rising costs and declining enrollments for many institutions, TQM is explained as the "answer". This paper reports the results of a national survey of institutions and business and engineering schools identified as having adopted TQM. The findings are reported in several categories: the leadership of the TQM movement and the timing of the events; how people are trained, educated, and informed about TQM; the specific areas using TQM and statistical tools being used; and the benefits and frustrations realized through the management practice.

Total Quality Management on Campus:

Implementation, Experiences, and Observations

Introduction

American colleges and universities are in a period of major environmental changes. Increasing levels of tuition, declining demographics of traditional college-aged students, public demand for more accountability and increased productivity have made administrators in higher education experts in crisis management. "There is a major erosion of confidence in the leadership and the quality of higher education in the country. Respect for college and universities is gravely in danger" (Cornesky, McCool, Byrnes, Weber, 1991, p.1). Levine (1990) adamantly states that higher education cannot continue as it is. Since institutions are not operating in a period of growth, "higher education will have to live with relatively less" (p.4). Levine predicts that the future will be based on long-term health and effectiveness in addition to the trust and level of confidence from the general public. Every institution must address the questions of quality and costs.

Historically institutions have responded to demands for change by looking for a "quick fix." What was most desirable was any action that would make the pressure for change disappear, yet keep the status quo intact. However, the changes and pressures that now face higher education no longer respond to cosmetic solutions. The pressure for change continues to build for three reasons. First, higher education has become more important to society. Second, parents, students, employers, and other users of higher education are more sophisticated consumers of the education process and have greater expectations concerning education outcomes. And third, the increase demands on public funds and personal disposable income creates pressure for more cost efficiencies. Each pressure for change is important to consider.

That higher education is now being linked with the nation's ability to be economically competitive with other countries means that a college education is no longer considered purely an individual benefit. One consequence of this change is that the quality of education being offered by higher education institutions is now a concern to the nation. That there are more sophisticated consumers means that there is an increased ability to recognize effective education programs and a willingness to demand evidence that institutions are delivering the benefits they claim to provide. That state and federal government is unable to provide the same level of support and that college costs are taking a greater percentage of personal disposable income means a greater pressure to contain costs.

The evidence that business as normal in no longer acceptable can be seen from several directions. A number of books have been written that are severely critical of the education process (Anderson, 1992; Sykes, 1988). Others, such as Levine (1990) address the cost issues.

Higher education normally controls for quality at the beginning and end of the education process. At the beginning, institutions select the very best students who apply and/or hire the best faculty. At the end, having completed the required process steps, students are judged through various forms of assessment to either be worthy of graduation, in need of further process, or inferior and therefore rejected. The quality and effectiveness of the education process is rarely questioned (Chaffee and Sheer, 1992).

The lack of focus on the education process has been a major factor influencing both education outcomes and costs. This has led a number of institutions to consider a conceptual framework of problem solving that has been notably successful outside of higher education. This framework goes under a number of different labels: total quality management (TQM), continuous quality improvement (CQI), total quality education, or the like. For this paper we shall only refer to this conceptual problem solving framework as total quality management or TQM.

Success stories of TQM in industry have stimulated government and nonprofit organizations to adopt TQM (Hansen, 1993). Increasingly, academic institutions have been using TQM principles to positively position themselves in the future (Miller, 1991; Sherr and Teeter, 1991; Spanbauer, 1992). Seymour (1991, 1992) advocates that institutions need to adopt the philosophy and tools of TQM because it is a better way to manage higher education. According to Seymour (1992), TQM has made a difference in organizations around the world. "It cannot be dismissed as another management fad. It is not academic whimsy. It is too well-grounded in a scientific approach to problem solving, and it has been tested, scrutinized, and revised in thousands of organizations over a period of more than three decades. Bottom line: It works" (p.ix).

TQM Principles

The power of TQM, according to its proponents, lies in its principles. The principles are fundamentally a paradigm shift in how an organization is managed to achieve its mission. Total Quality Management can be described in numerous ways, but according to the authorities (Crosby, 1979; Deming, 1986; Juran, 1989; Marchese, 1991; Schmidt and Finnigan, 1992) it is a personal philosophy and an organizational culture that utilizes scientific outcomes measurement, systematic management techniques, and teamwork to achieve the mission of the organization. In summary, the seven principles most mentioned by the authorities include:

- **Mission or outcomes driven.** Outcomes are defined by the expectations of all the stakeholders. Outcomes must be in harmony with the mission and values of the institution, and they must be defined in measurable terms. For an organization to know how things should be done, it must know why they should be done. Without a clearly defined mission, clarified by measurable outcomes, an organization lacks a clear sense of direction and focus. What is important is that the mission is defined by those who are willing to help the

organization to exist, e.g. the stakeholders. For a higher education institution this would include students, employers, funding agencies, faculty, and society in general. Each play a significant role in helping insure that the institution ultimately delivers what it promises to do.

- **Systems oriented.** All actions are part of interactive and interdependent systems. A change in one part of the institution has an impact on the other parts of the institution. Because of this, most problems in an organization are a result of problems with the system and not with the people. Examples of system problems are when faculty are rewarded for delivering papers at conferences but travel funds are frozen or students are expected to participate in team projects but have not developed the skills necessary to working in teams and are graded as individuals.
- **Decision by fact.** The real issues can not be found until the problem is clearly understood through the systematic gathering of data. There are three types of data necessary before a decision can be rationally made: data measuring the desired outcomes, data measuring the process, and data that develops a contextual understanding. Deming (1993) puts it this way: "... information, no matter how complete and speedy, is not knowledge. Knowledge has temporal spread. Knowledge comes from theory. Without theory, there is no way to use the information that comes to us on the instant" (p. 109).
- **Empowerment of people.** Individuals are responsible for the achievement of the mission and must be aware of how their position and actions relate to the mission. All parties involved in a process should be involved in decisions concerning that process. The closer a person is to the actual issue, the more involved the person should be in the decision making process. Collaboration and teamwork produces better results than individual efforts. While this principle is one that is totally consistent with the collegial governance values of academe, it

also differs because it also includes the involvement of students, employers, and others who are directly concerned with the outcomes of the institution.

- **Change is constant.** A fundamental assumption of the quality principles is that the mission of the institution is based on the expectations of the stakeholders. Since it is logical to assume that these expectations will change, then it is logical to assume that the mission of an organization is constantly, sometimes slowly - sometimes rapidly, evolving. As organisms are constantly evolving and changing to adapt to their environment, organizations also change to meet the expectations of their stakeholders. This is the fundamental nature of continuous improvement.
- **Education and training.** Since an organization is constantly changing, there is a need to continuously see that the organization's members have the knowledge and skills to meet the demands of these changes. This means that all members of the organization are somehow involved with continuous education and training. If education and training are not provided by the organization, lack of training is a system problem.
- **Leadership.** Top leadership must be willing to constantly articulate and reward the implementation of the quality principles. For most organizations, the implementation of the quality principles means a fundamental change in the way of doing business. In short, a dramatic cultural change. For this change to occur and be sustained, there must be constant support for those who can influence the culture. This "cultural leadership" must be ready to reinforce, through a positive reward process, the changes necessary to make the quality principles a personal philosophy as well as an organizational culture. However, it should be noted that this constant attention to the values of the quality principles is really no different than the responsibilities that leaders have in maintaining an ethical and productive organization.

External Support

The business community believes so strongly in the principles and philosophy of TQM that it is forming partnerships with higher education institutions to encourage their pursuit of quality. American Express, Ford, IBM, Motorola, Procter and Gamble, and Xerox sponsor The Total Quality Forum, an annual meeting for academic leaders. This group has established a leadership steering committee that is composed of both the academic and business communities to improve the awareness and implementation of TQM in higher education.

Many universities and colleges are partnering with industry to integrate the TQM principles into courses and curricula as well as into daily operations. The IBM-TQM Partnership With Colleges and Universities is an example of the commitment industry is making to work with higher education to accelerate the teaching, research, and use of quality management practices in college and university operations. The TQM University Challenge sponsored by Motorola, Inc., Proctor and Gamble, Xerox, Milliken, and IBM is aimed at incorporating TQM principles into business and engineering curricula and institutional administrative processes (Horine, Hailey, and Rubach, 1993). Business executives believe that "business and academia have a shared responsibility to learn, to teach, and to practice total quality management" (Robinson et al., 1991, p.94).

The accrediting organizations are another source of external support for the implementation of the TQM principles. Beginning with the 1993-94 school year, business schools across the country seeking accreditation will be required to demonstrate to the American Assembly of Collegiate Schools of Business (AACSB) how they use the quality principles to improve curricula, faculty, and administration. Often the quality principles are being used in isolated parts of the institution. In one national survey, several institutions noted that their TQM efforts were not institution-wide but were concentrated in a single site such as the business or engineering school (Horine, et al., 1993).

Business and engineering schools have more contact with industry than other disciplines within other schools. Business schools are currently offering courses and programs in TQM; engineering schools have been teaching the statistical tools of TQM for decades. These schools often employ people who go back and forth between the college campus and companies making them more comfortable with the language and tools (Seymour, 1991). Therefore, business and engineering schools have often been the leaders in stressing the adoption of TQM (Bateman and Roberts, 1993; Hogg and Hogg, 1993; Nielsen, 1993; Seymour, 1991).

According to Ewell (1991), the incentives for change for higher education are still too few and predicts the adoption of TQM will continue to be slow until higher education "feels" the crisis. Fortunately, the supporters of TQM believe the principles will help institutions respond to the changes in advance, to enable them to be proactive rather than reactive. Levine (1990) reminds us that "we in education must recognize that our clock is ticking" (p. 5).

Survey of TQM Institutions and Programs of Study

The higher education literature explains the ideas of and philosophy behind TQM and discusses how it applies to higher education (Chaffee and Sherr, 1992; Cornesky et al., 1991; Lewis and Smith, 1994; Sherr and Teeter, 1991). The literature also contains numerous self-reported articles outlining how specific institutions have adopted TQM (25 Snapshots..., 1994; Teeter and Lozier, 1993). Several survey studies have been conducted to determine which colleges and universities are pursuing quality improvement. Other surveys have collected information from institutions known to be practicing total quality in order to monitor the progress (Axland, 1992; Evans, 1992). What is missing is using a number of case studies to systematically examine the impact of the quality principles. By keeping the quality principles as the independent variable, it is possible to see what affect each quality principle has on an institution, and to discover what principles are more likely to have a positive or negative impact.

This study provides a descriptive analysis of how TQM is being adopted in higher education institutions, both administratively and academically. This study adds to the current literature by surveying the institutions that have been identified as having adopted TQM and presents an analysis of their experiences in such areas as why they purposefully began their implementation of the quality principles, on which principles they focus, and their perceptions of results. The following questions were of particular interest:

- How is TQM being implemented?
- Who is receiving the training? Who is conducting the training?
- What are the specific areas using TQM?
- What are the specific tools being used?
- How has the management style changed since the adoption of TQM?
- What have been the results in terms of benefits and frustrations?
- What is the relationship between TQM being taught and TQM being practiced in business and engineering schools?

Methodology

After reviewing the literature, a questionnaire was developed based primarily on current literature (Chaffee and Sherr, 1992; Marchese, 1991; Seymour, 1991, 1992, 1993; Sherr and Teeter, 1992). The first section asked respondents for background information on their institutional experience with TQM. This included questions about the leadership of the TQM movement and the timing of events. The second section was directed at determining how people are trained, educated, and informed about TQM. The third section asked about the specific administrative and academic areas using TQM. Questions were included about the TQM tools used most frequently. The final section contained questions about the benefits realized and the

frustrations experienced because of TQM. Several open-ended questions were included to collect specific examples of TQM implementation.

The survey was pre-tested on people associated with the AAHE Continuous Quality Improvement Project. Modifications were made based on their feedback. The institutions were selected on the basis of three criteria: the institution is part of the AAHE CQI Consortium, the institution was identified in an ERIC publication as practicing TQM, or the institution was listed in the annual survey printed by Quality Progress. If the institution was identified by any one of these sources, the institution was included in the sample.

Contact persons were those who had direct leadership in the TQM process as reported in these publications. The original mailing and follow-up postcard went to 408 institutions and yielded a response rate of 28%. A second questionnaire was mailed which increased the response rate to approximately 52%. Sixty-two additional institutions responded to an abbreviated questionnaire; bringing the final response rate to 67%. The results from this survey have been used to identify 15 institutions who have had three or more years experience in implementing the quality principles. These institutions are now being more comprehensively analyzed through two to three day cite visits. These visits entail in-depth interviews with 12 or more key institutional leaders and two focus groups made up of faculty or administrators. Several of these case studies have been completed and the preliminary findings are integrated within this paper.

From the total of 275 responses, 168 or approximately 61 percent responded fully to the questionnaire and represent institutions actively implementing TQM. Forty percent of the 107 remaining respondents indicated that TQM is currently being implemented. This information is based on incomplete questionnaires and responses from the abbreviated questionnaires. Data analysis and findings reported are based solely on information from the 168 completed questionnaires. (See Table 1.)

Table 1. Respondents' Institutional Type

Institutional Type	Number of Respondents
4 Year Public	87
4 Year Private	46
2 Year Community College and Technical Schools	35
Total	168

Findings

How is TQM being implemented?

While TQM has been a focus of industry since the late 1970s, the adoption of TQM in institutions of higher education is a rather recent phenomenon. Of the responses received, approximately 84% of the institutions adopted TQM in 1990 or later, with less than 5% of the institutions reporting implementation beginning in 1994. (See Table 2.)

Table 2. Year Implementation Began

Year	Frequency	Percent
1985	1	0.6
1986	1	0.6
1987	3	1.8
1988	9	5.4
1989	9	5.4
1990	18	10.7
1991	32	19.0
1992	51	30.4
1993	33	19.6
1994	8	4.8
No response	3	1.8
Totals	168	100.0

Note. Data collected in February and March 1994.

A combination of external and internal forces was cited as the driving force behind the implementation of TQM by a majority of the institutions (52%), with 41% citing only internal forces and 5% citing only external forces. Examples of commonly stated internal forces included administrative interest from the President, Provost, or Dean; faculty interest, and interest in providing an improved environment to better satisfy student needs. The three external forces mentioned most were decreasing budgets, declining enrollments, increasing competition, and increasing demands from business and industry.

Initial leadership for the TQM movement most frequently came from the central academic administration (i.e. President, Provost, Vice President of Academic Affairs) by itself or in

combination with another area, next most frequently from a specific college or department within the institution, and third most frequently from central business administration. Sixty percent of the institutions have a specific implementation plan; 50% of those are internally developed, 11% are externally developed, and 39% are a combination of the two. In most cases, there is one person who currently oversees the implementation of TQM in the institution, although 8% of the institutions responded that there is no one in charge. Of those institutions with someone in charge, most frequently the responsibility of overseeing the implementation is in the hands of a part-time person whose commitment is 25% or less (53% of the institutions); however, a full-time person is in charge in 20% of the institutions and consultants only are in charge in 8% of the institutions.

Who is receiving the training? Who is conducting the training?

The literature emphasizes that the success of implementing TQM principles within institutions of higher education depends on how the campus community is trained in the ideas and practices of TQM and is kept updated on specific projects that are being undertaken. If everyone is trained, then there is a common culture within the institution and communication is possible among all the groups (Marchese, 1991; Miller, 1991; Seymour, 1992; Sherr and Teeter, 1991). Our survey indicates that support staff is most frequently receiving training (89%), followed by administration (85%) and then by faculty (67%). Students also are receiving training in at least 13% of the institutions.

Case studies support that faculty members are not being trained to the same extent as administrators and staff. In one case institution, faculty members were intentionally excluded, in other cases they have been fully integrated into the training process. In most of the cases, faculty have been skeptical about the importance of TQM and therefore have not actively participated in the quality movement on campus.

In terms of who is providing the training, 21% of the institutions reported staff provides the training, 15% indicated faculty do the training, and 7% stated that they use consultants. Approximately 52% of the institutions have combinations of two or all three of these groups providing the training. Case studies have suggested that internal personnel conducting the training is important in demonstrating their commitment to quality. In addition, case studies have shown that the amount of training is reflected in the level of understanding and ability to use the information. The most common methods used for the training are training sessions and pilot projects; followed by discussion groups, readings, and newsletters; the methods least used are newspaper articles, special mailings, and brochures. Approximately 52% of the institutions are measuring the effectiveness of the training that is being provided.

What are the specific areas using TQM?

For each of the following administrative areas, between 36 and 45% of the responding institutions indicated the use of TQM.: top-level administration, registration, admissions, physical plant, and accounting. The response for information technology was lower at 29%. On the academic side, classroom instruction and Business Administration most frequently were indicated as using TQM by more than 35% of the institutions, followed by Engineering (30%). Individual departments, Arts and Sciences, and other colleges were each indicated by approximately 15% of the respondents.

What are the specific tools being used?

A question on statistical tools was asked to determine which tools are most frequently used in institutions of higher education. The choices presented on the questionnaire are the seven commonly-cited tools of statistical process control (SPC) plus seven more management-based tools (Cornesky et al., 1992). Responders were asked to rank the top three tools used in their institutions; the results, therefore, convey both the frequency of use and the overall importance of

specific tools. Flow charts ranked highest by far, followed by cause-and-effect diagrams, nominal group process, and then by affinity diagrams and Pareto diagrams. The flow chart, cause-and-effect diagram, and nominal group process are probably the most popular techniques since these tools are easily used and are employed early in the analysis of processes. Statistical Process Control tools (flow chart, cause-and-effect diagram, and Pareto diagram) may be frequently used because until recently these were the only tools taught in the majority of TQM training sessions. It is interesting to note that two of the management-based tools (affinity diagrams and nominal group process) are already so popular since they are relatively recent additions to the TQM literature.

The order of the remaining tools that were included on the questionnaire is as follows: control chart, operational definition, histogram, relations diagram, force field analysis, systematic diagram, run chart, scenario builder, and scatter diagram. This second group of tools was indicated to be used much less frequently than the first group. Based on case study information, all of the tools are being used. Interviewees were reluctant to differentiate between the use of tools indicating that most of the tools are used and considered important to the success of the quality process.

How has the management style changed?

A comparison of the management style in the institution before TQM was implemented with the current management style indicated a definite benefit of TQM, only 2% of the persons responding thought their institutions now have a more autocratic style of leadership than earlier while 63% indicated a more collegial style of leadership (33% indicated no change). The mean management style score before the implementation of TQM was 3.2 and the mean score now is 4.1, on a scale of 1 (indicating autocratic) to 7 (indicating collegial). This was substantiated in the preliminary results of the completed case studies as well.

What have been the results in terms of benefits and frustrations?

Improved communication and improved customer satisfaction are the two key benefits cited by approximately 65% of the respondents; more coordination and increased morale were cited by approximately 50% of the respondents; less re-work and a changed culture were indicated by approximately 30%, decreased costs and improved teaching were indicated by slightly over 20% of the respondents. The major frustration is that persons perceive TQM is a fad (63%), followed by the problem that the implementation of TQM is time-consuming (62%). Slightly fewer than half of the respondents reported impatience and political/turf problems as frustrations at their institutions. No extended commitment from the top and not the right approach for higher education each were indicated by more than 35% of the respondents. The perception that no value is added by TQM was cited as a problem by 22% of the respondents and the idea that "success" is measured only in quantitative ways was acknowledged as a problem by approximately 13% of the institutions. In fact, case studies have revealed that the commitment from the top administrators is necessary for success. The quality movement appears to break down and loses momentum if this commitment does not exist.

What is the relationship between TQM being taught and TQM being practiced?

As stated earlier, TQM efforts occasionally have been concentrated in business and engineering programs rather than implemented in entire institutions. Almost 50% of the respondents indicated their institution has a separate business school in which TQM is currently being taught, but only 50% of these business schools are actually practicing TQM. Approximately 25% of the respondents indicated their institution had a separate engineering school in which TQM is currently being taught and 75% of these engineering schools are practicing TQM. It is important to realize that knowing about TQM and teaching the principles and tools of TQM is not the same as an institution or portion of an institution embracing and applying the philosophy and principles.

Conclusions and Ideas for Future Research

Is TQM on campus a pipe dream or a new paradigm? According to the preliminary results of the survey, it is an organizational strategy that is just being tested at a number of institutions. Since most of the institutions indicated that the adoption of TQM has only been since 1990, it is difficult to know if this will be the paradigm of the future. There are both strong supporters for the quality principles as well as critics. A majority of the respondents indicated that it was a time-consuming process and could easily be perceived as a fad. These findings are consistent with the results of Seymour (1991, 1993). Therefore it will be important to longitudinally monitor the progress of these institutions to determine if they demonstrate the patience to continue with the practice until it becomes part of the organization's culture.

Leonard (1986) stated that to learn is to change and education is a process to change the learner. If the quality principles are to be part of the institution's culture they must become part of faculty values and norms. Yet, as others have pointed out (Chaffee and Sheer, 1992; Seymour, 1993; Teeter and Lozier, 1993) and also confirmed by survey data and case study data, faculty may be the major hurdle in the implementation of quality management regardless of the type of institution. One of the cultural barriers is the willingness of faculty to become actively involved in a continuing education program to learn the new skills of the quality principles. This study shows that faculty make up a very small percentage of those participating in the TQM education programs. This is even true in the Business and Engineering schools where TQM is primarily being taught.

As businesses and higher education institutions have found out, implementing TQM or the quality principles will take a great deal of time and has a high chance of failure. Deming (1993) points out in his writings that what we are talking about is not new management tools and techniques but a basic cultural and philosophical way of doing business. It requires organizations

to more clearly define their purposes for existing and then take conscious action to insure that these purposes are achieved. Fundamental to the quality principles is the understanding that it is the processes or systems that determine the achievement of these purposes, that all the people or stakeholders of the organization need to be part of the process and that there must be ways to establish the reinforcement of individuals within the organization to interdependently work together, while still maintaining individuality and creativity.

This study has examined the starting efforts of 168 institutions as they begin to explore the use of the quality principles in their institution. The findings show both resistance and successes. Further study is needed before we will know if this is a passing fancy or the start of a fundamentally new way of organizing ourselves to achieve the purposes of higher education.

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